2010

AVerMedia®

AVerDiGi EH5216+

Service Manual

AVerMedia® AVerDiGi EH5216+

Version 1.0

2010/1/1

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1. Version history

Version	Released date	Description	Editor	Approved by
1.0	1/1/2010	First version	Erick	Jackie/Karen

2.About this service manual.

2.1 Legal information & disclaimer.

Initial information

This guide is a troubleshooting reference used for maintaining and servicing the DVR EH5216+. It provides comprehensive information on identifying DVR features, components, and spare parts; troubleshooting DVR problems; and performing DVR disassembly procedures.

The target users of this document are our value customers and customer service teams.
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Warning

Only authorized technicians should repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly-/module-level repair.
Because of the complexity of the individual boards and subassemblies, do not attempt to make repairs at the component level or modifications to any printed wiring board. Improper repairs can create a safety hazard.
Any indication of component replacement or printed wiring board modification may void any warranty or exchange allowances.

Caution

To prevent static damage to components inside your DVR, discharge static electricity from your body before you touch any of your DVR's electronic components. You can do so by touching an unpainted metal surface.

2.2 Technical specifications.

Please refer to the following general technical specifications for the EH5216+ DVR.

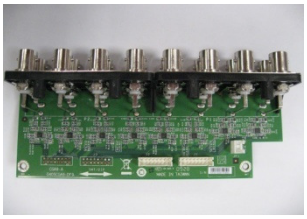
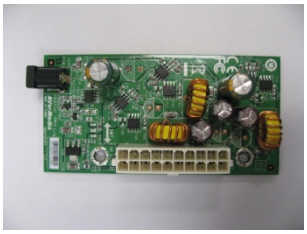
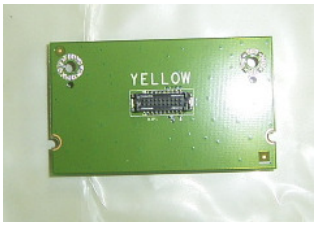
Electrical specifications		
Camera Inputs (analog)	16 BNC connectors	
Camera Inputs (IP)	16 CH MPEG4/ JPEG /H.264 data streams from IP cam	
Video output	VGA Out x 1, Composite out x 2	
Loop Through Outputs(analog)	16 BNC connectors (optional)	
Composite video signal	1 Vpp, 75 Ohm	
Recording resolution (analog inputs)	PAL: 352 x 288 (CIF), 720 x 576 (D1) NTSC: 352 x 240 (CIF), 720 x 480 (D1)	
Recording resolution (IP inputs)	2560x1200, 1920X1200, 1600X1200, 1440X1280, 1440X 1080, 1280X1024, 1280X960, 1024X768, 800X600, 720X576, 720X 480, 640X480, 352X 288, 352X 240, 320X 240	
Compression Method (analog)	MPEG4	
Recording rates	CIF(NTSC/PAL)	D1(NTSC/PAL)
	480/ 400 fps	240/ 200 fps
Recording rates per channel (video inputs analog)	NTSC:0-30 fps PAL:0-25 fps	
Recording rates per channel (video inputs IP)	NTSC:0-30 fps PAL:0-25 fps	
Preview resolution	PAL: 720 x 576 NTSC: 720 x 480 VGA: 1024 x 768	
Supported IP cameras (support IP PTZ, IP IO, and IP audio if IP cameras built-in)	AXIS, Panasonic, SONY, Arecont, Mobotix, BOSCH, IQinvision, JVC, TOSHIBA, VIVOTEK, ACTi, D-Link,	

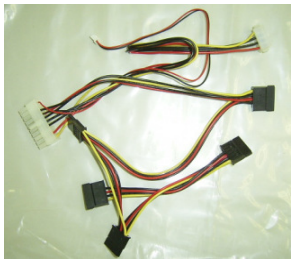
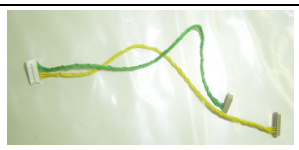
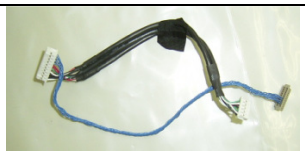
	PiXORD, PELCO, Apron, Lilin and more
Audio Inputs	16-ch line-in signal,8 KHz sampling rate (optional)
Audio Output	1-ch line-out signal
Microphone Input	1-ch line-in signal
Alarm Inputs	16 Input voltage: max. 6 VDC
Relay Outputs	4 Voltage range: 125VAC - 30 VDC Switching current: max. 1A
PTZ control (analog)	Protocol supported: Pelco-D, Pelco-P, DynaColor, Lilin, CD55, DiGiDome, YoKo, MicroJack-P, Cannon(VC-C4R), Panasonic(CS859/CW860), Samsung(SCC-641), JVC(TK-C676), JVC(TK-C675), Sony(EVI-D70P), Philips(TC8560/TC700), ELMO(PTC-200C), Fastrax II(HID-2404), AmericanDynamics_Ultra, DMP23-H2, MD101, Sony(15-cz45-1)
Storage capacity support	Support up to 4 SATA HDD (1 removable, 3 internal)
eSATA support	Support eSATA RAID
Ethernet	10/100/1000Base-T, bandwidth-limited
RS 485 port	1, Terminal Block, Tx+, Tx-, Rx+, Rx-
RS 232 port	1, 9 Pin, Male
USB 2.0	3
DVD writer	Included; supported medias: DVD±R, DVD±RW
Power Input	Power adapter; 19V DC
Typical power consumption	approx. 72W
Power consumption	max.80 W
Operating system	Embedded Linux, Graphical User Interface
Operator Interface	Front panel keypad, USB mouse, USB PC keyboard, remote controller(support optional IR extension cable)
Web Browser (Remote Client)	Microsoft Internet Explorer 6 or higher, on Windows 2000, XP, VISTA, Windows 7
Export of video/audio data	AVerMedia format
Mechanical facilities	
Dimensions(H x W x D)	65x430x370 mm
Weight	4.6 KG (Not include HDDs)
Environmental conditions	

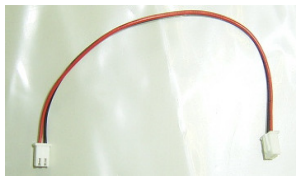
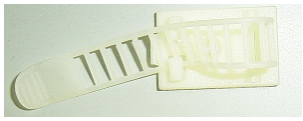
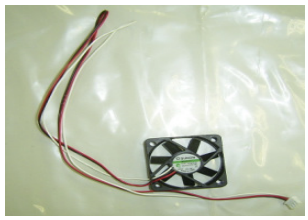
Operating temperature	0 ℃ to +40 ℃ (32 ° to 104 ℉)
Storage temperature	-30 ℃ to +60 ℃ (-22℉ to 140 ℉)
Relative humidity in operation	50%-80%
Relative humidity when stored	90%
Electromagnetic Compatibility (EMC)	
USA	FCC Part 15, Class A
EU	EN 55011(Group I, Class A) EN 61000-3-2: 2000, Class A
Safety	
EU	EN 60950-1: 2001+A11:2004

3. Parts list.

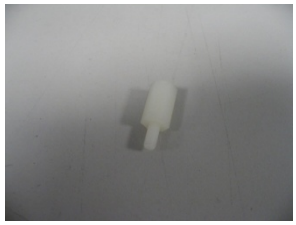
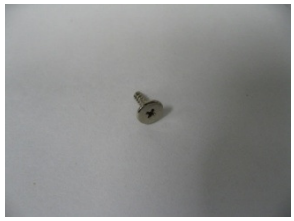
3.1 Main modules.

Part number	Part description	Picture
51F2X8NP00AD	GM_EH5216 LITE_AVI_0_VER B	
51C2A9NP00AG	GM_SEB5116_AVI_0_VIDEO IN	
51C2A9NP00AC	GM_SEB5116_AVI_0_IR	
51C2A9NP00AH	GM_SEB5116_AVI_0_POWER	
51F2X8NP00AB	GM_EH5216_AVI_0_USB	
51C2A9NP00AB	GM_SEB5116_AVI_0_FUN.NU M(2 IN 1)	

Part number	Part description	Picture
51C2A9NP00AD	GM_SEB5116_AVI_0_CONTROL	
51C2A9NP00AB	GM_SEB5116_AVI_0_FUN.NUM(2 IN 1)	
064APOWERBHF	CABLE-ATX CABLE-760mm	
064AOTHERBFS	CABLE-POWER SWITCH & IR-410mm	
064AOTHERBFW	CABLE-FUNCTION & CONTROL-200mm	
064AOTHERBHB	CABLE-USB*3 & NUMBER-200mm	
0700DVD--AKJ	COMPUTER-DVDROM-DRW-IHAS324/BLACK	

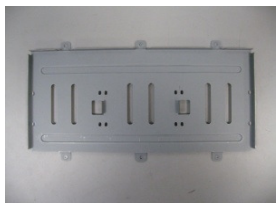
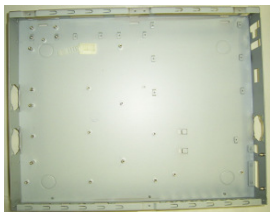
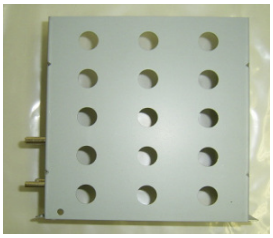
Part number	Part description	Picture
064AOTHERBFJ	CABLE-SERIAL ATA CABLE-500mm	
064ASATA-BDV	CABLE-SATA TO E-SATA-40CM	
067AG252PAAV	WIRE-2.5*2P-15CM-JIE LI	
064AOTHERBGA	CABLE-UL2651-16C-150mm	
208AC2F1-ADX	PLASTIC-電線固定板 (FWA-22C)	
041312GOOAK3	ADAPT-AC/DC-100V~240V/19V -4.74A	
0410KDE12AB5	FAN-KDE1205PFV2-550mm	

3.2 Screws and other parts.

Part number	Part description	Picture
207AAAAAAAN	PSUPOT-TH11-11mm	
100AAAAAAAEG	SCREW_MU_I 頭_T_M2.6*8 ㎜_NI_尾 TP1	
100AAAAAAADD	SCREW-MU-M3*4 扁頭	
100AAAAAAAH5	SCREW_BI 頭_T_1.7*5 ㎜ _NI_頭徑 4.5-尾 TP3	
100AAAAAAADH	SCREW_MU_F 頭_M_3*5 ㎜ _NI_頭徑 5	
100AAAAAAAG4	SCREW-MU-5-8-TP-皿頭-鍍鎳	

Part number	Part description	Picture
100AAAAAAAFD	SCREW_MU_P 頭_T_3*8 ㎜ _NI_尾 TP1	
100AAAAAAAG6	SCREW_MU_I 頭_M_3*5 ㎜ _NI+耐落_頭徑 5.5	

3.3 Outside case and other parts.

Part number	Part description	Picture
200AF2X8-BV6	PB-F2X8-N19B-前面板(金綠)-EH5216+	
102AF2X8-ASX	MTBOX-N20B-F2X8-上蓋(金綠)	
112AC2A9-AKA	METAL-C2A9-補強桿	
112AC2A9-AKE	METAL-C2A9-HD 固定架(3IN1)	
102AF2X8-ASW	MTBOX-N20B-F2X8-下蓋(金綠)	
112AC2A9-AKB	METAL-C2A9-光碟固定架	

4. Disassembly & Assembly procedures.

4.1 Tools needed for disassembling and assembling the DVR.

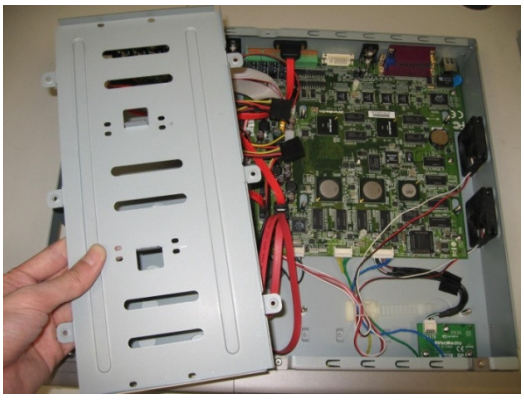
4.2 To disassemble / assemble the DVR.

Step 1. Initially, please have unscrew the 8 screws of the outer case. These are located in left, right and back side of this DVR. Please see the following pictures for details.

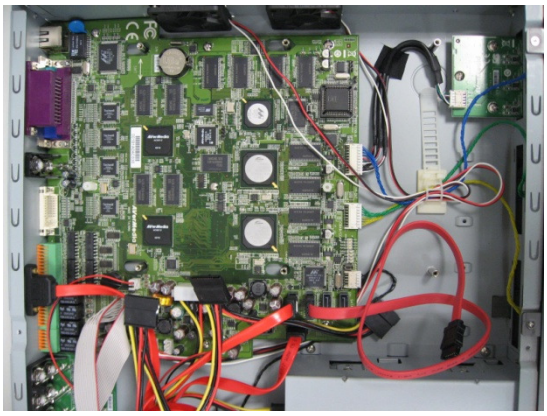
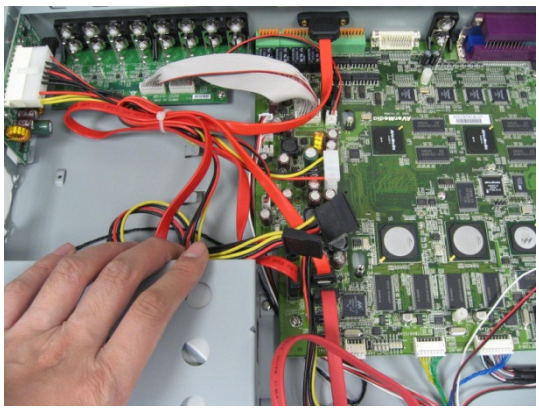
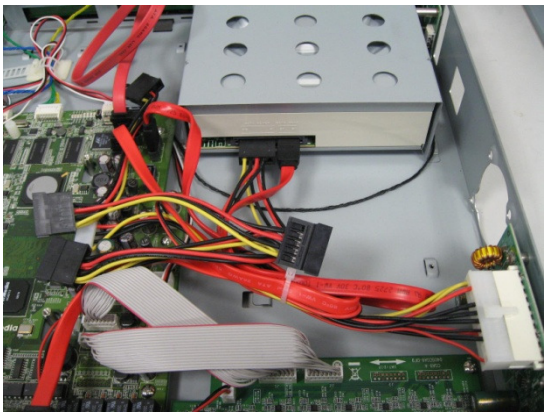
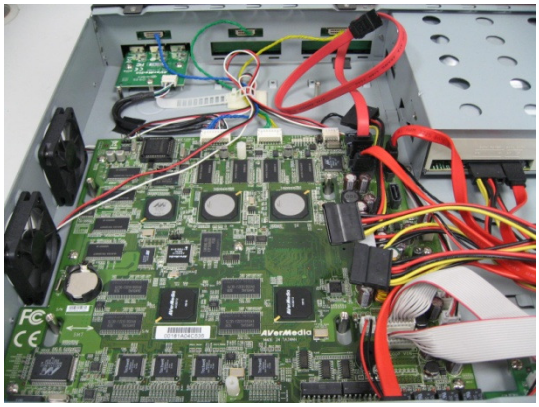
Step 2. Remove the outer case after unscrewing the 8 screws.

Step 3. Afterwards, please remove the iron protection steel by unscrewing two mounting screws. See the following pictures.

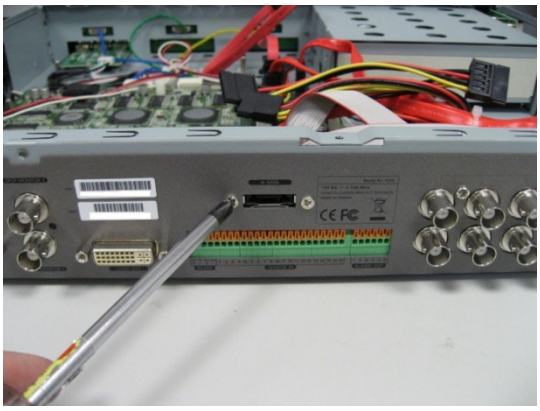
Step 4. Please remove the HDD iron rack.



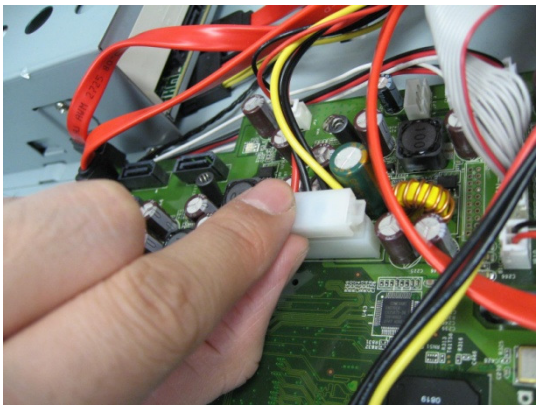
Step 5. After removing the HDD iron rack, the inside of the DVR will reveal itself as following. Please use the pictures below as a reference and remember the correct cable connections for further disassembling.

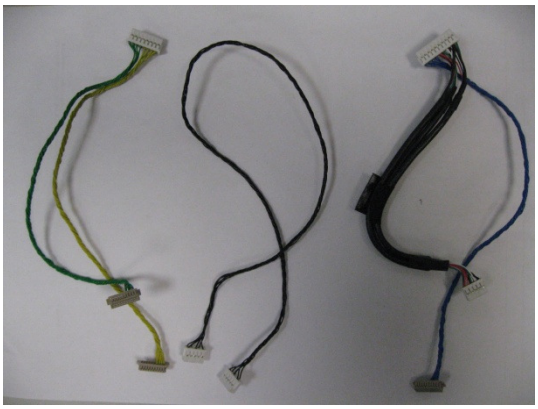
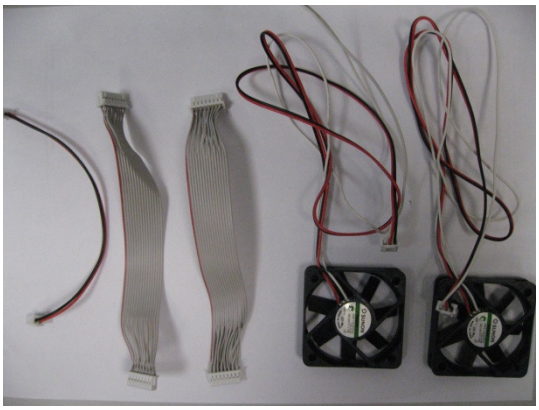
Step 6. The next step includes the removal of all power cables (i.e. SATA / e-SATA / main power cable) by unscrewing the two screws from the e-SATA interface on the back of the DVR. Accordingly, please unmount all power cables from the PCB board.



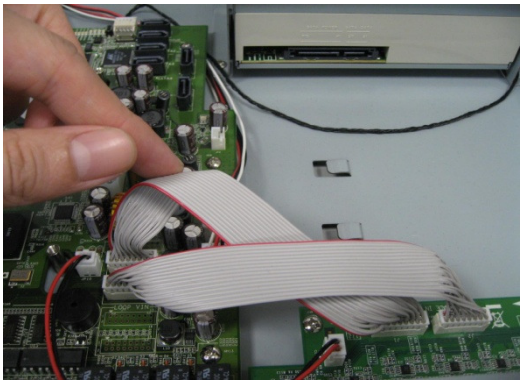
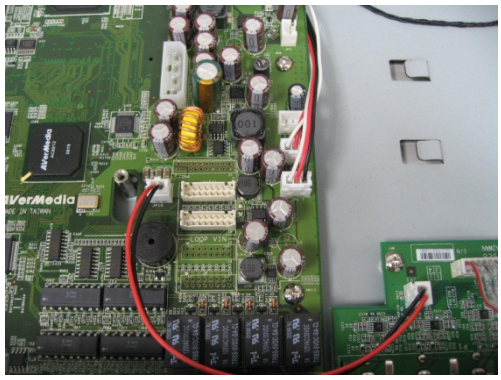
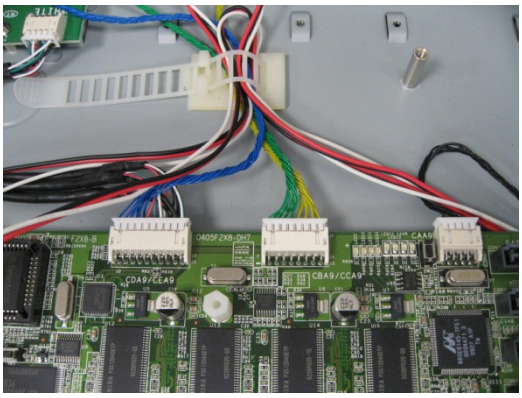
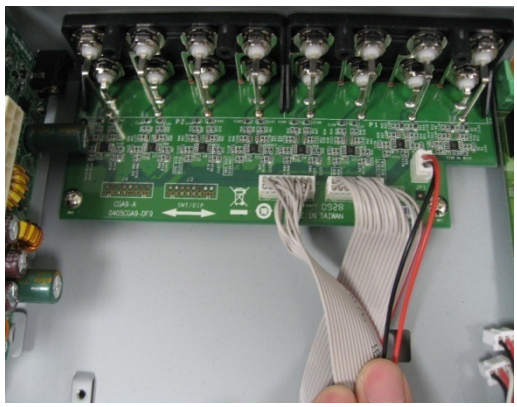
Step 7. Please remove the power / SATA cables from the main power board, DVD-ROM drive and PCB board. Please see the following pictures for the detailed removal procedure.



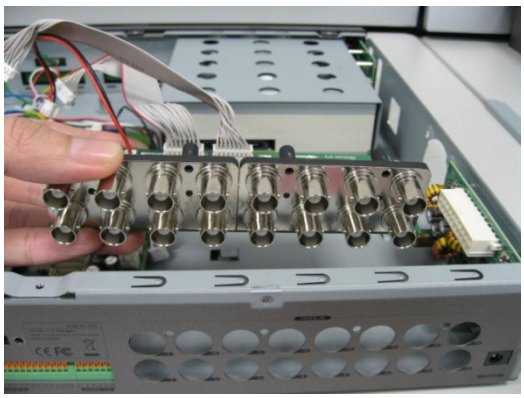
Step 8. In the next step please remove all remaining connection cables from and to the PCB board inside the DVR. Those cables are the one coming from the front panel (Yellow, green, blue and 3 thick black cables), front panel power board, video in BNC board and two fans – including cables. Please refer to the following pictures and make sure to remove them carefully.

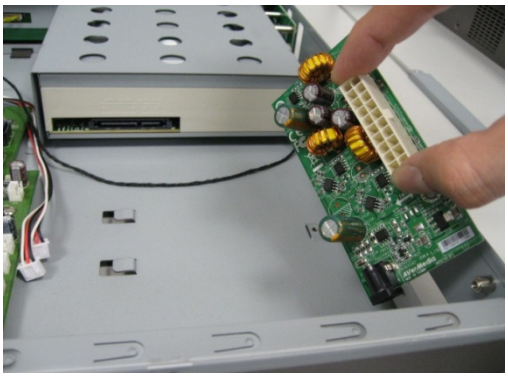
Step 9. You may see the following pictures revealing the exact connection position of the cables you are about to remove.

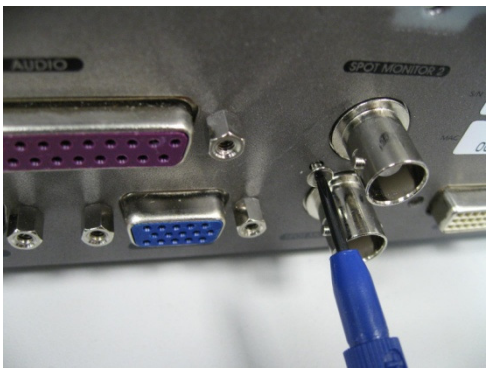
Step 10. After removing all the cables insides the unit, please start removing the PCB boards. Initially, please remove the video-in BNC board. It is being mounted to the back of the DVR through 6 screws.



Step 11. After removing the video-in BNC board, please remove the main power board located next to it. Please refer to the following pictures.

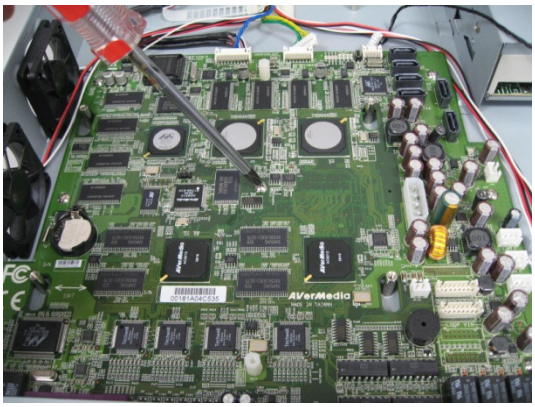


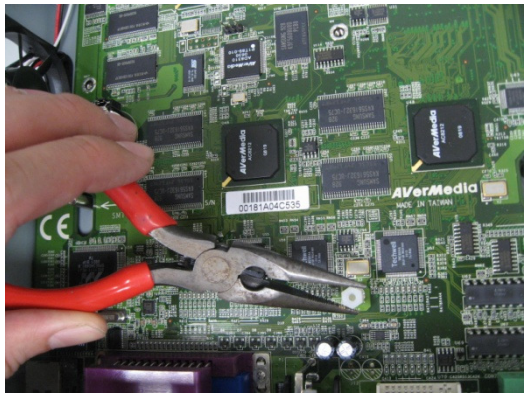
Step 12. Once the main power board has been removed, please follow up by disassembling the main system PCB board - the biggest PCB board inside the unit. Please unscrew all remaining screws from the back of the DVR and make sure to removing the two fans before taking out the main PCB board. Please see the following pictures.



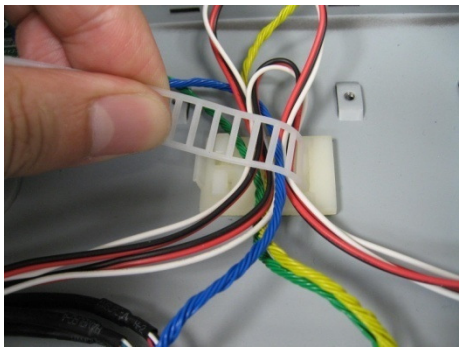
Step 13. The 2 cooling fans may be un-mounted by unscrewing 4 screws, as you can see from the following pictures.

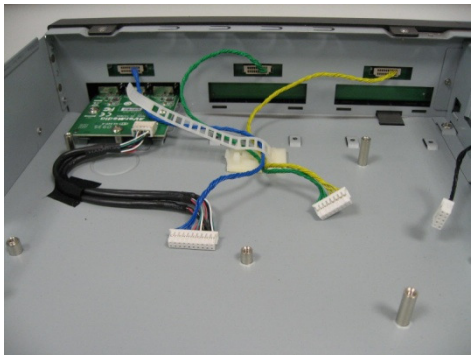
Step 14. The system PCB board is mounted inside the case with 9 screws. Please unscrew them and take out the board.



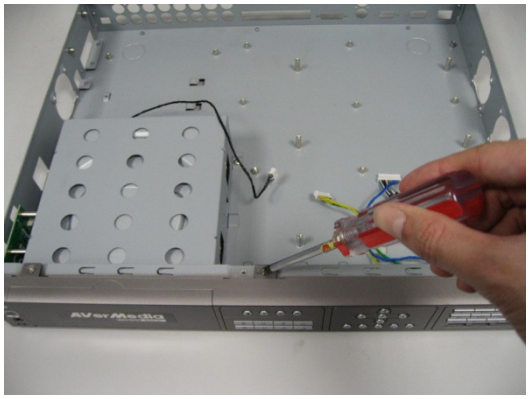


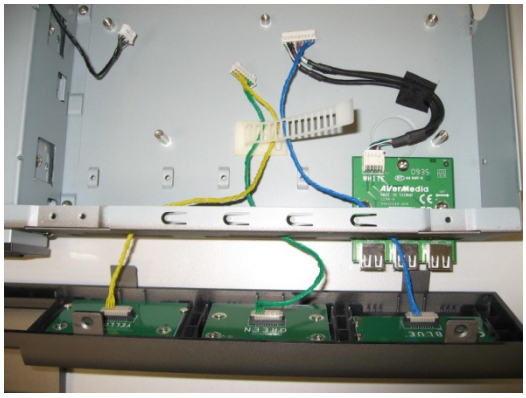
Step 15. This step reveals the removal procedures of the front panel of the DVR. Please loosen the lace which holds the connection cables of the front panel.

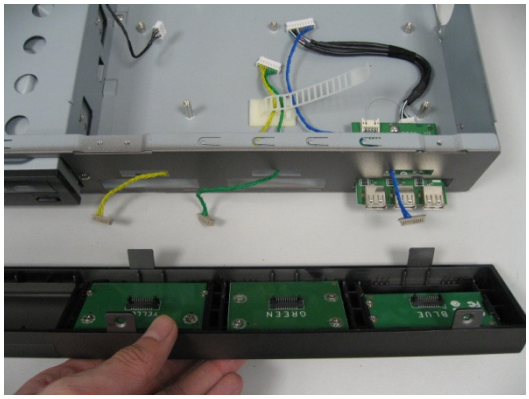




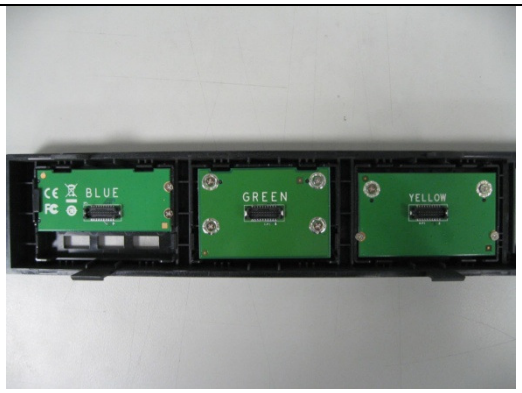
Step 16. The front panel is secured through 3 screws. Please remove these and unplug the connection cables coming from the PCB board. The pictures below reveal the details.





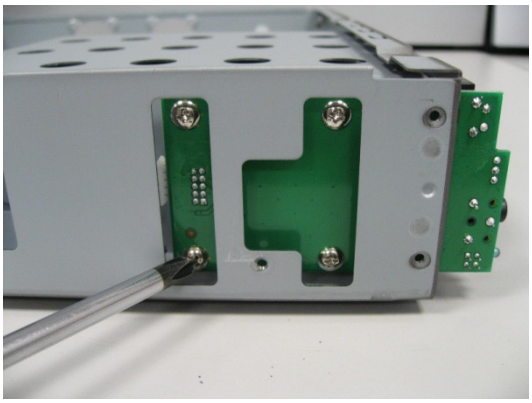


Step 17. Once the front panel has been removed, please remove the 3 PCB boards from the plastic case. Unscrew total 10 screws from the 3 PCB boards.

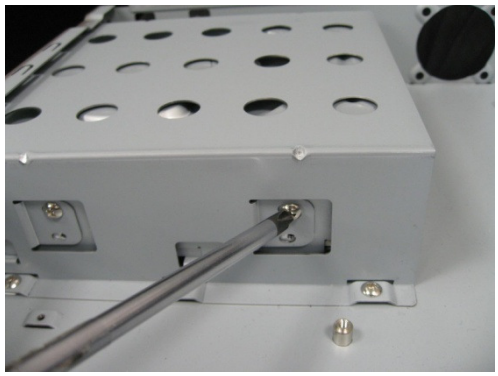


Step 18. After the front panel has been removed from the DVR, the USB PCB board has to be removed from the metal case by unscrewing 3 screws. Please refer to the following pictures.

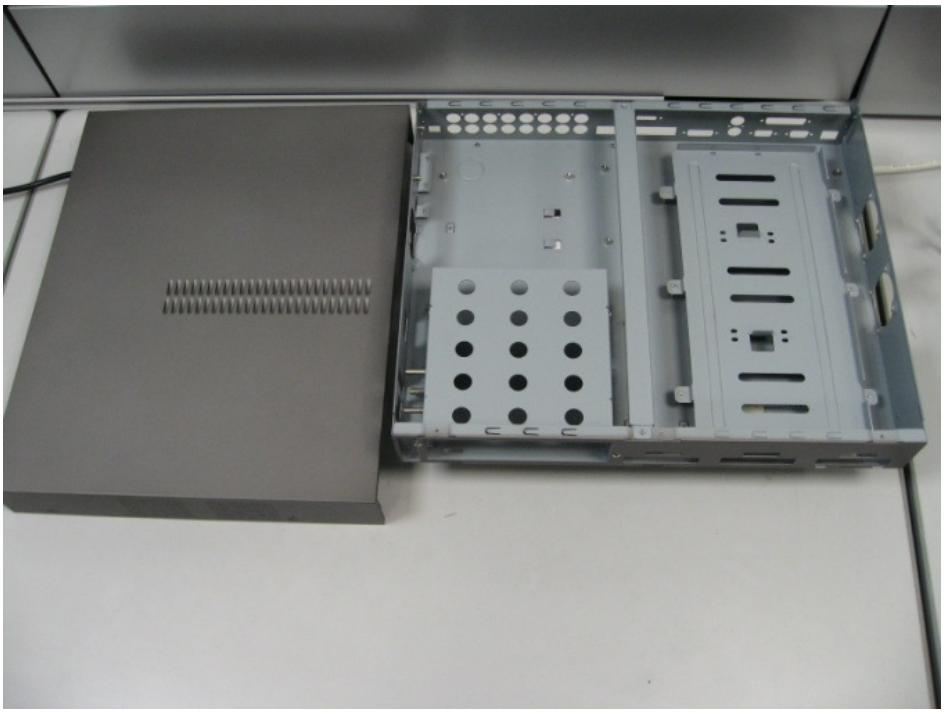
Step 19. The last remaining PCB board inside the metal case holds the front panel power button and the power- / HDD-LED indicator. Please disassemble it by unscrewing 4 screws.



Step 20. The final step reveals the removal of the internal DVD drive. To do so, please unscrew the 4 screws, which hold the drive inside the metal case.



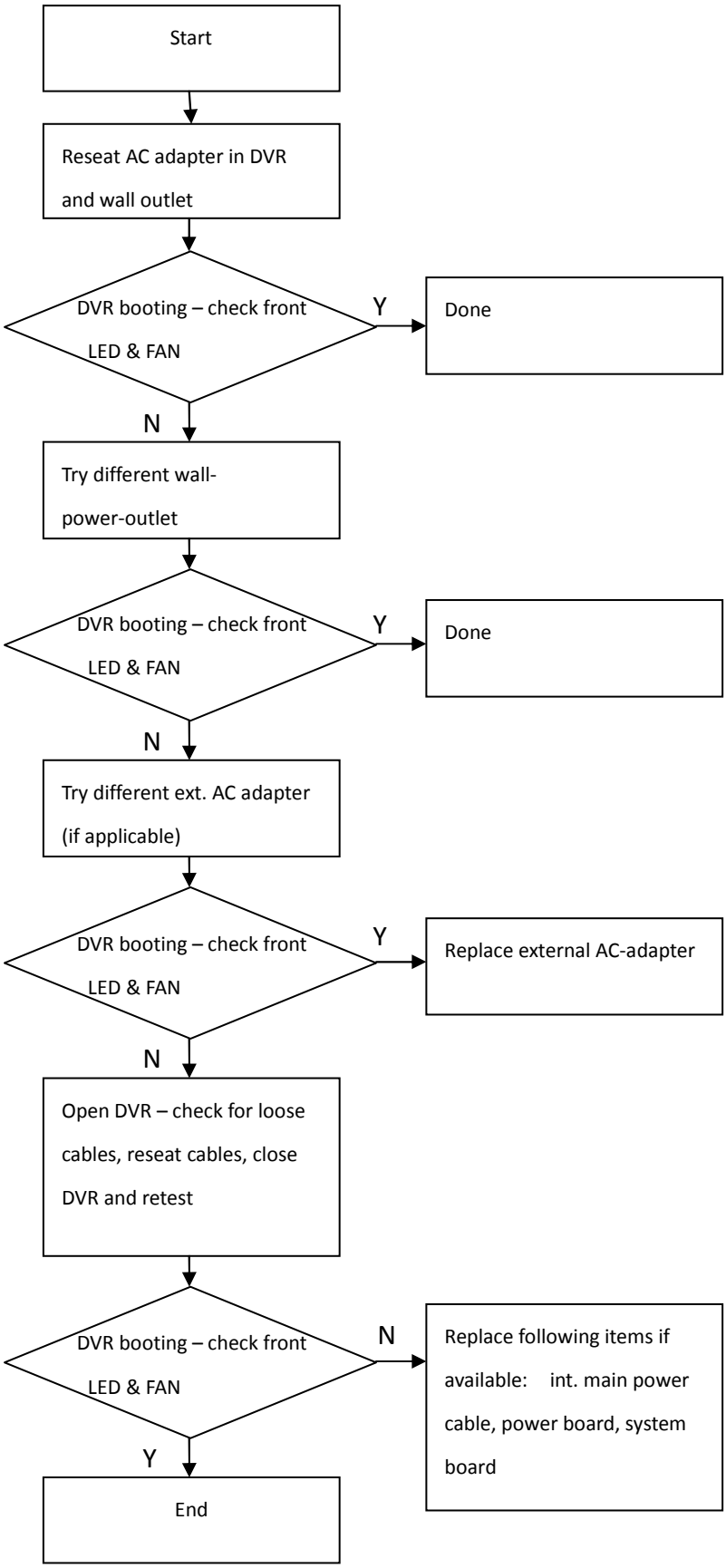
Step 21. Please see the following pictures, which show the completely disassembled DVR and all of its components.



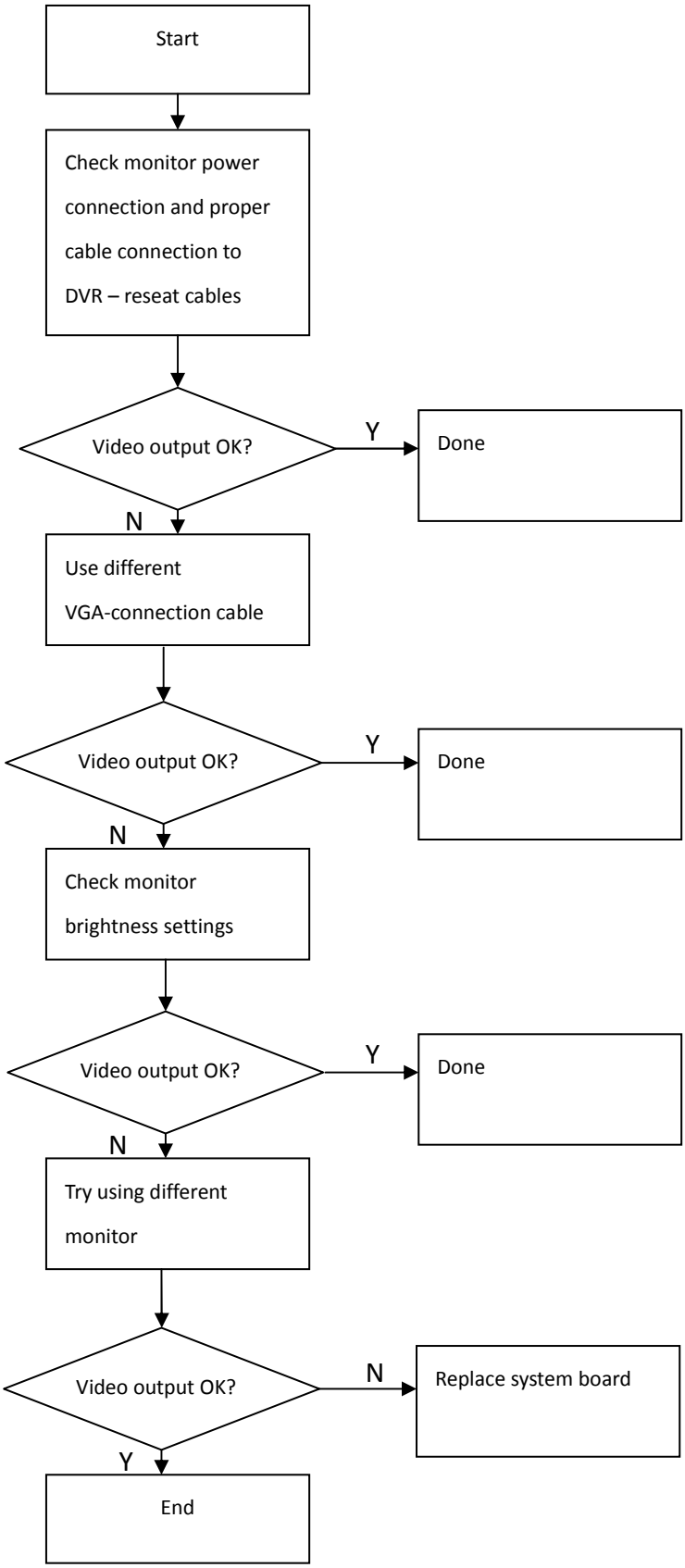
5. Troubleshooting Procedures

5.1 (None UI related issues)

5.1.1 DVR does not boot up?


Start
Reseat AC adapter in DVR and wall outlet
DVR booting – check front LED & FAN
Y
Done
N
Try different wall-power-outlet
DVR booting – check front LED & FAN
Y
Done
N
Try different ext. AC adapter (if applicable)
DVR booting – check front LED & FAN
Y
Replace external AC-adapter
N
Open DVR – check for loose cables, reseat cables, close DVR and retest
DVR booting – check front LED & FAN
N
Replace following items if available: int. main power cable, power board, system board
Y
End

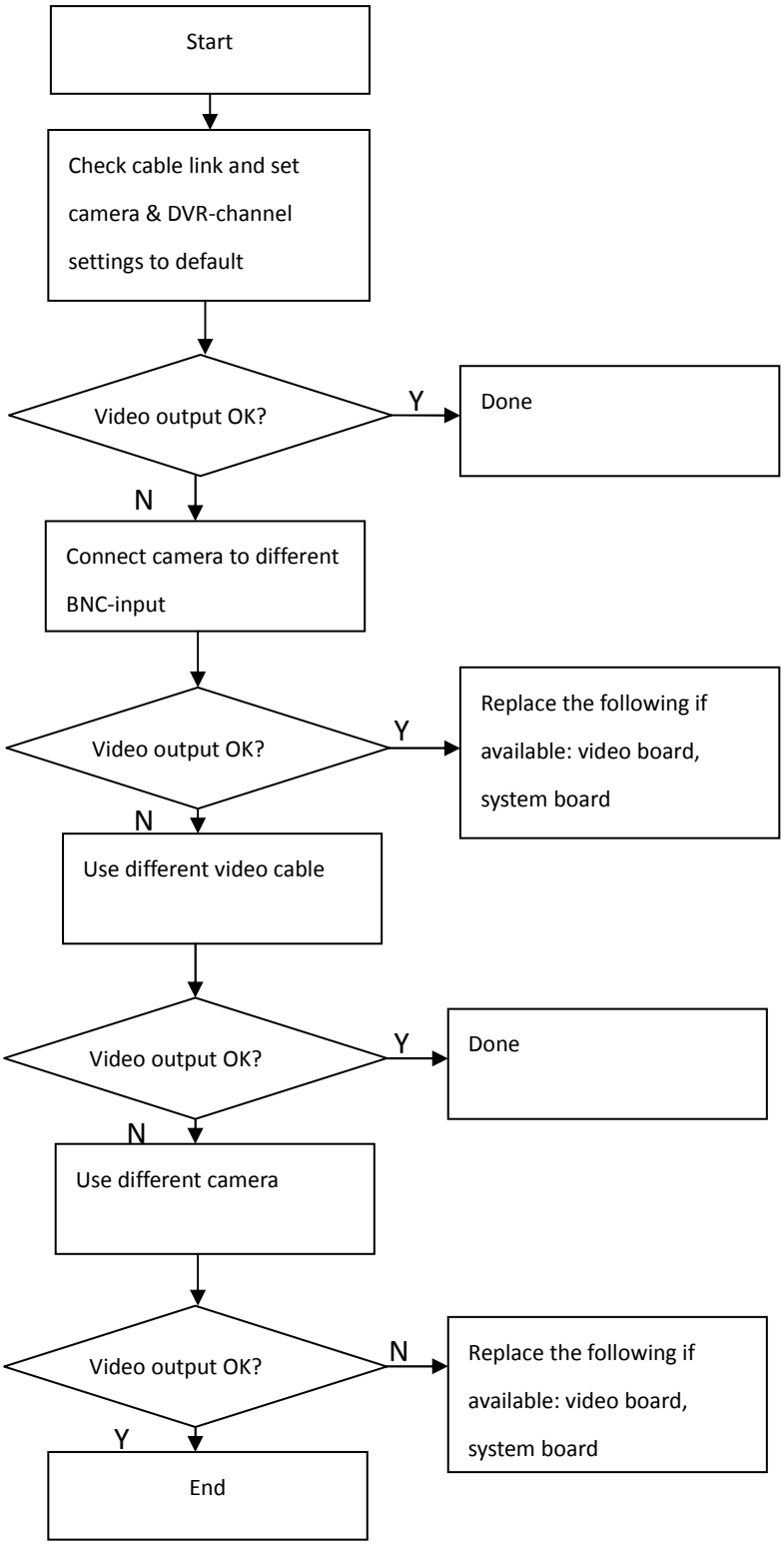
5.1.2 No local VGA / BNC display?



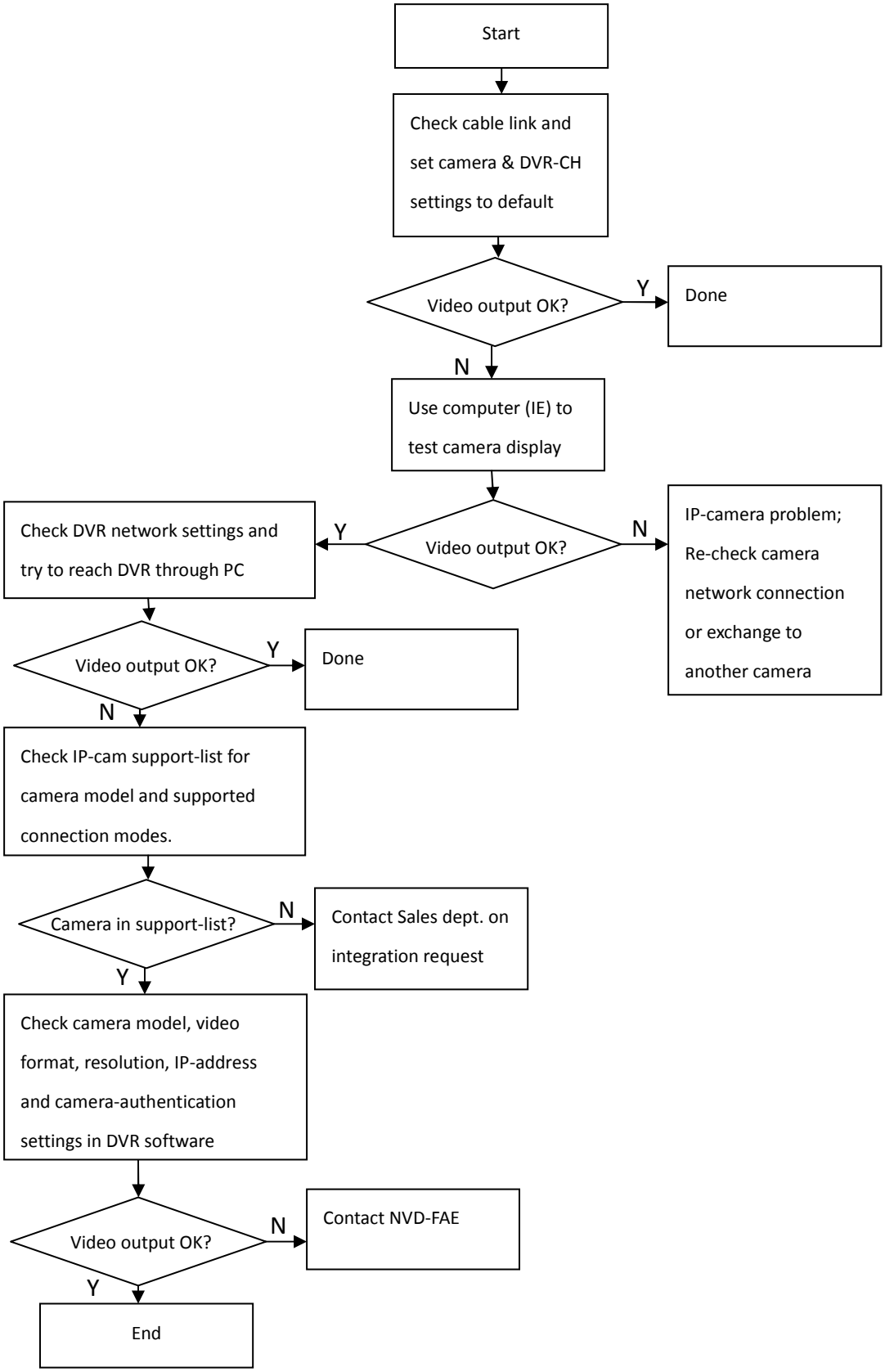
5. Troubleshooting Procedures

5.2 (UI related issues)

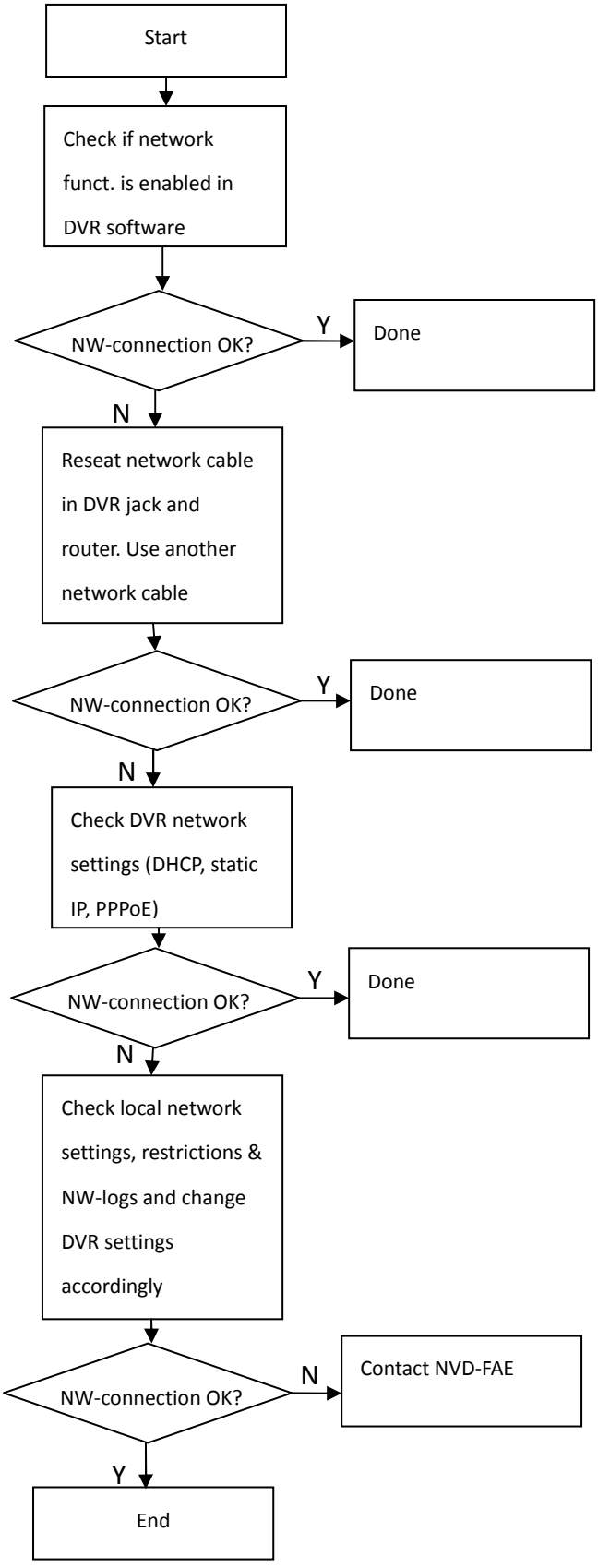
5.2.1. No camera (analog) display?



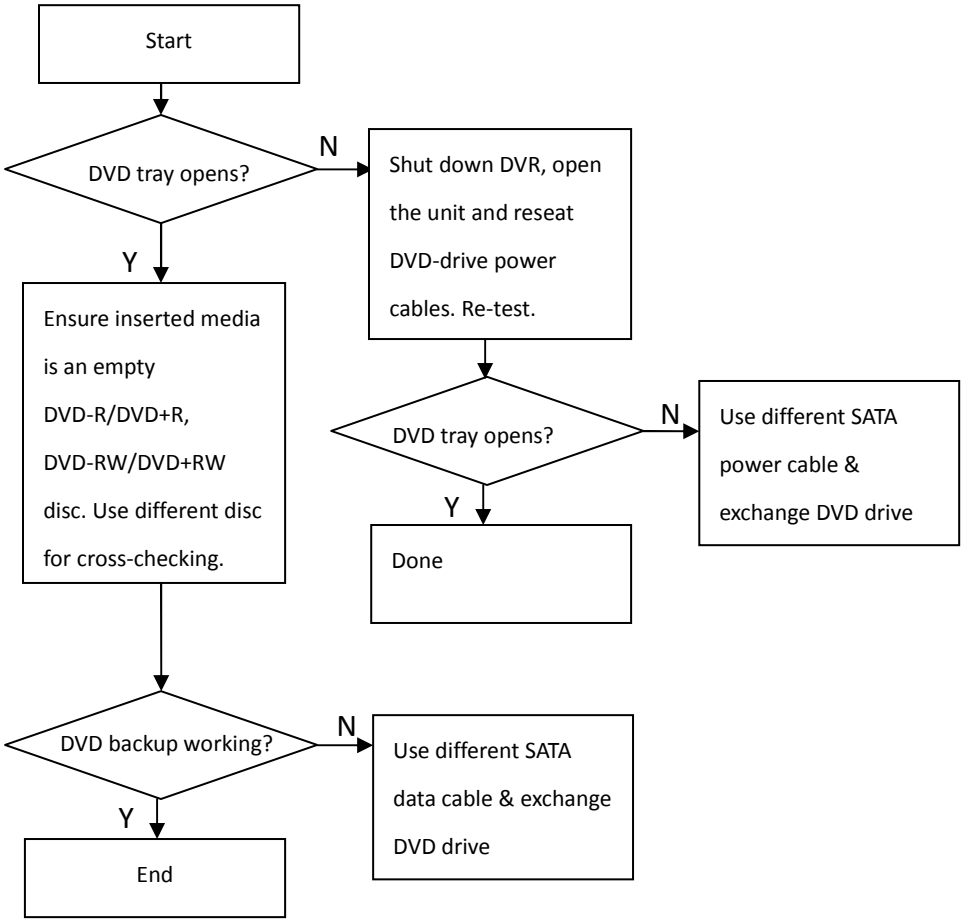
5.2.2. No camera (IP camera) display?



5.2.3. No network?



5.2.4. DVD backup not working?



5.2.5. No audio?

- Check audio connectors and reseat cables

- Check volume level of connected speakers

- Enable audio recording in DVR menu

- Check volume/mute settings in DVR software

5.2.6. HDD recording not working?

- Cross-check HDD model with HDD support list available on our website

- Open DVR, check HDD connectors and reseat cables

- Use different SATA/power connector and cable if available

- Try accessing the HDD, when mounted into your PC system

- Ensure recording is turned on within DVR software

- Check the remaining storage space available

- Check schedule and recording type settings

- Switch to always recording mode for testing purposes

5.2.7. Pointing device not working?

- Verify pointing device to be fully functional using PC or different DVR

- Use another pointing device

- Try plugging the pointing device into different USB-port if available

- Open the DVR unit and reseat the USB-front panel connection cables

5.2.8. Remote control not working?

- Check batteries within your remote control and exchange to new ones

- Make sure to point at the IR-receiver at the front receiver and verify if nothing blocks the visual connection between the remote control and the receiver

- If using an optional IR-extender cable, make sure it is plugged in correctly and enabled within the software (only EB-series)

- Make sure to set the remote control to the correct DVR-ID before usage (only EB-series)

- Try using a different remote control if available

5.2.9. Front panel control not working?

- Try different front panel-buttons and verify if all controls are not working

- Double check whether the unit is still operating normally by attaching an external input device. Try accessing menus and entering the playback mode.

- Open the unit and make sure all front panel connection cables are seated correctly

5.2.10. DVR shuts down unexpectedly?

- Check wall power plug for sudden power failure

- Reseat power cable in AC-adapter and wall outlet. Try using another power cord

- Check AC adapter for obvious damage (water, etc.) and replace if available

- Open the unit and make sure all fans are working correctly – check if their spinning is probably being blocked by dust. The unit may shut down due to overheating

- Check the internal power board for obvious damage

- Start up the DVR and check the “Schedule” options for reboot settings

- Check the event log to find details about the abnormal reboot (remote reboot, etc.)